

CLAIMS

1. A compressor airfoil for pressurizing air inside a surrounding casing, said airfoil comprising:

laterally opposite pressure and suction sides joined together at chordally opposite leading and trailing edges and extending in span from a root to a tip;

stagger increasing above said root, and decreasing above a midspan pitch section of said airfoil; and

a dihedral angle relative to said casing increasing above said pitch section to said tip.

2. An airfoil according to claim 1 further comprising a concave axial projection along said leading edge, with said root and tip extending forward of said pitch section along said leading edge.

3. An airfoil according to claim 2 wherein said stagger increases in magnitude from said root to said pitch section, and decreases in magnitude above said pitch section toward said root stagger magnitude.

4. An airfoil according to claim 3 wherein said dihedral angle above said pitch section is opposite to said dihedral angle between said root and pitch section.

5. An airfoil according to claim 4 wherein dihedral angle along said leading edge at said tip is greater than below said pitch section.

6. An airfoil according to claim 5 further comprising forward aerodynamic sweep at both said leading and trailing edges of said tip.

7. An airfoil according to claim 6 further comprising aft aerodynamic sweep from said root to said pitch section and to below said tip along said leading and trailing edges.

8. An airfoil according to claim 6 wherein said stagger varies along said leading edge to bow said leading edge concave in span along said suction side.
9. An airfoil according to claim 6 wherein said dihedral angle is unidirectional along said tip between said leading and trailing edges.
10. An airfoil according to claim 6 wherein said stagger has a maximum value located in a range of about 60%-85% span from said root.
11. A compressor airfoil comprising:
laterally opposite pressure and suction sides joined together at chordally opposite leading and trailing edges and extending in span from a root to a tip; and
stagger increasing above said root, and decreasing above a midspan pitch section of said airfoil.
12. An airfoil according to claim 11 wherein said stagger increases in magnitude from said root to said pitch section, and decreases in magnitude above said pitch section toward said root stagger magnitude.
13. An airfoil according to claim 12 further comprising a dihedral angle relative to a surrounding casing increasing above said pitch section to said tip.
14. An airfoil according to claim 13 wherein said dihedral angle above said pitch section is opposite to said dihedral angle between said root and pitch section.
15. An airfoil according to claim 14 wherein dihedral angle along said leading edge at said tip is greater than below said pitch section.
16. An airfoil according to claim 14 wherein said stagger varies along said leading edge to bow said leading edge concave in span along said suction side.

17. An airfoil according to claim 14 wherein said dihedral angle is unidirectional along said tip between said leading and trailing edges.
18. An airfoil according to claim 14 further comprising forward aerodynamic sweep at both said leading and trailing edges of said tip.
19. An airfoil according to claim 18 further comprising aft aerodynamic sweep from said root to said pitch section and to below said tip along said leading and trailing edges.
20. An airfoil according to claim 14 further comprising a concave axial projection along said leading edge, with said root and tip extending forward of said pitch section along said leading edge.